



VALID UNTIL 5/4/07

## APPENDIX 10 – AGRICULTURAL ASSISTANCE PROGRAM

### BACKGROUND

This appendix is about the Agricultural Assistance Program category of AQMD's FY 2007 Carl Moyer Program (CMP). All information in PA# P2007-08 and this Appendix apply. For additional detail regarding this program category, refer to CARB's 2005 CMP Guidelines. In the case of any conflict between CARB guidelines and AQMD criteria, the more stringent criteria will prevail.

The Agricultural Assistance Program (AAP) was created through provisions of Assembly Bill 923 (AB 923, Firebaugh) and went into effect on January 1, 2005. Unlike the Carl Moyer Program (CMP), the AAP does not require the emissions reductions to be surplus. AQMD's AAP is intended to help agricultural facilities bring their agricultural engines into compliance with AQMD Rule 1110.2, which requires agricultural stationary engine emissions to be controlled, and with state regulations of portable and off-road equipment.

"Agricultural engines" are those used in the production of crops or raising of fowl or animals.

### REGULATORY REQUIREMENTS

#### AQMD Rule 1110.2

In June of 2005, AQMD amended Rule 1110.2 – Emissions from Gaseous and Liquid -Fueled Engines to require stationary agricultural engines over 50 hp to meet the same emission, monitoring, source testing, and recordkeeping requirements as other stationary engines. Both diesel and spark-ignition<sup>1</sup> (SI) engines used for irrigation or other agricultural uses will have to be controlled or replaced. The emission limits do not apply to emergency electrical generators or orchard wind machines.

It is generally not practical to control emissions from existing diesel engines. Even the newest diesel engines do not meet the rule emission limits. Diesel engines should be replaced by controlled SI engines or electric motors. Existing SI engines can be

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<sup>1</sup> Usually natural gas, propane or gasoline fired.

retrofitted with emission controls to comply with the rule, or be replaced by electric motors.

Tier 1 and uncertified diesel engines and uncertified SI engines that are located at agricultural facilities required to have AQMD permits by Rule 219 (c) must comply with the rule by July 1, 2008. This applies to the larger facilities that are also subject to Title V permitting requirements. Most other stationary agricultural engines must comply by January 1, 2010. One exception is that a stationary agricultural engine that is rejected for electrification by the electric utility or does not qualify for AAP funding has until 2014 to be replaced by a Tier 4 diesel engine.

### **AQMD Permitting Requirements for Agricultural Engines**

Subdivision (q) of AQMD Rule 219 (see <http://www.aqmd.gov/rules/reg/reg02/r219.pdf> for more detail) requires permits for the following portable and stationary agricultural engines:

- Engines located at facilities with emissions that make them subject to Title V permitting requirement
- Engines purchased or modified after July 7, 2006.

The following types of engines do not require AQMD permits:

- Engines rated at 50 hp or less.
- Emergency engines, such as emergency generators.
- Orchard wind machines that operate no more than 30 hours per year.
- Engines in motor vehicles, including cars, trucks, tractors, and other self-propelled off-road farm or construction equipment.
- Electric motors.

### **CARB Airborne Toxic Control Measure for Portable Diesel Engines**

On February 26, 2004, CARB adopted an air toxic control measure (ATCM) to reduce diesel particulate matter (PM) emissions from portable diesel-fueled engines having a rated brake horsepower of 50 and greater (>50 bhp). The ATCM requires all portable engines to be certified to Tier 1, 2, or 3 U.S. EPA/ARB off-road engines standards by 2010. After 2010, all fleets of portable engines are required to meet diesel PM emission averages that become more stringent in 2013, 2017, and 2020. Owners/operators of fleets will have flexibility in determining how the fleet emission standards are to be satisfied. Options that are available to satisfy these standards include: operating cleaner engines, replacing engines, using add-on control devices, switching to alternative diesel fuels or alternative fuels, and receiving credit for electrification. For more information see CARB's webpage at <http://www.arb.ca.gov/diesel/peatcm/peatcm.htm>.

## CARB MOYER PROGRAM RESOURCES

Applicants are highly encouraged to review CARB guidelines for additional requirements of the CMP. CARB guidelines are incorporated into AQMD's Moyer Program by reference. The 2005 CARB guidelines may be downloaded from:

<http://www.arb.ca.gov/msprog/moyer/guidelines/revisions05.htm>

On this web page, there are links to the four parts of the CARB 2005 CMP guidelines. These parts are described below for easy reference.

- Part I provides the Executive Summary, Program Overview and Administrative Requirements primarily applicable to air districts) for CARB's Carl Moyer Program. The link to Part I is [http://www.arb.ca.gov/msprog/moyer/guidelines/2005\\_Carl\\_Moyer\\_Guidelines\\_Part\\_1.pdf](http://www.arb.ca.gov/msprog/moyer/guidelines/2005_Carl_Moyer_Guidelines_Part_1.pdf)
- Part II provides the Project Criteria for each program category. The link to Part II is [http://www.arb.ca.gov/msprog/moyer/guidelines/2005\\_Carl\\_Moyer\\_Guidelines\\_Part\\_2.pdf](http://www.arb.ca.gov/msprog/moyer/guidelines/2005_Carl_Moyer_Guidelines_Part_2.pdf)
- Part III provides the Agricultural Assistance Program guidelines. Link to Part III at [http://www.arb.ca.gov/msprog/moyer/guidelines/2005\\_Carl\\_Moyer\\_Guidelines\\_Part\\_3.pdf](http://www.arb.ca.gov/msprog/moyer/guidelines/2005_Carl_Moyer_Guidelines_Part_3.pdf)
- Part IV is the Appendices section of the guidelines. The link to Part IV is [http://www.arb.ca.gov/msprog/moyer/guidelines/2005\\_Carl\\_Moyer\\_Guidelines\\_Part\\_4.pdf](http://www.arb.ca.gov/msprog/moyer/guidelines/2005_Carl_Moyer_Guidelines_Part_4.pdf) . This section includes the following Appendices.
  - Appendix A – Acronyms
  - Appendix B – Tables for Emission Reduction and Cost-Effectiveness Calculations
  - Appendix C – Cost-Effectiveness Calculation Methodology
  - Appendix D – Example Calculations
  - Appendix E – Description of Certification and Verification Executive Orders
  - Appendix F – Retrofit Emission Control Strategies
  - Appendix G – Description of Functional Equivalency of Non-Original Equipment Manufacturer Repowers and Rebuilt Engines for use in Repowers

## HIGHLIGHTS FOR 2007

AAP-eligible projects include the repower or retrofit of stationary agricultural engines required to comply with Rule 1110.2 or portable agricultural engines required to comply with the CARB Portable Diesel ATCM.

- The project cost-effectiveness limit is \$14,300 per weighed ton of NO<sub>x</sub>, PM and ROG emissions reduced. A four (4) percent capital recovery factor is used for the cost-effectiveness calculation.
- Cost-effectiveness calculations are based on particulate matter (PM<sub>10</sub>), oxides of nitrogen (NO<sub>x</sub>), and reactive organic gases (ROG). The formula is provided below. AQMD staff will calculate the NO<sub>x</sub>, PM and ROG emissions reductions during the evaluation process.

### Annualized Cost (\$/year)

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#### NO<sub>x</sub> reductions + 20(combustion PM<sub>10</sub> reductions) + ROG reductions (tons/year)

- Applicants **must** provide current vendor quotes, **obtained within the last 90 days**, with their application to document the incremental cost of implementing the proposed technology. This will require documentation of both the baseline and low-emission project costs. Applicants can request funding up to the full differential cost between an optionally certified low-emission vehicle/engine/equipment and its new base standard emission equivalent; however, less may actually be awarded, depending on the results of the cost-effectiveness evaluation.
- Applicants **must** also provide documentation covering the past two years that justifies the activity level projected for the vehicles (i.e., mileage logs, hour-meter records, business records, fuel receipts, etc.).
- All projects must be operational within eighteen (18) months of contract execution or by May 31, 2009, whichever is earlier.
- The new engine/equipment/vehicle must not have been purchased prior to the effective date of the contract.
- A project must be in operation for at least three years from the time it is first put into operation; CARB may approve a shorter project life on a case-by-case-basis.
- AQMD reserves the right to disqualify any application that does not comply with all applicable requirements including submission of a complete application package. For Agricultural Assistance Program projects, this includes the main application as well as the information requested in Attachment 10 to the main application.

- Pre- and Post-Inspection of all vehicles/engines approved for funding is required, as well as verification of engine destruction. Payment will be made only after all inspections are completed and engine/vehicle destruction is verified.
- See Project Types and Project Criteria sections for additional important information regarding AAP requirements.

## **EVALUATION METHODOLOGY**

AQMD staff will evaluate all submitted applications and make recommendations to the Governing Board for final selection of project(s) to be funded. Applications will be evaluated based on the cost-effectiveness of emissions (NO<sub>x</sub> + ROG + 20\*PM) reduced on an equipment-by-equipment basis. Due to program priorities and/or funding limitations, project applicants may be offered only partial funding, and not all applications that meet cost-effectiveness criteria may be funded.

## **ELIGIBLE COSTS**

Eligible project costs (i.e., costs for which AAP funding may be requested) are limited to the incremental cost of a project to implement the reduced emission technology. The incremental cost is the cost of the reduced emission technology minus the baseline cost. The incremental cost shall be reduced by the value of any current financial incentive that reduces the project price, including tax credits or deductions, grants, or other public financial assistance.

The cost of the baseline technology for a repower with an engine is the cost of rebuilding the existing engine. The cost of the baseline technology for a repower with an electric motor is 50 percent of the cost of rebuilding the existing engine. For retrofits, there is no baseline technology cost; hence the entire cost of the retrofit is eligible for funding. Operation and maintenance costs are not eligible for AAP funding.

## **REPORTING AND MONITORING**

Owners of stationary agricultural engines participating in the AAP are required to keep appropriate records for the life of the project and for three years after the project life is completed. AQMD has the authority to conduct periodic checks or require operating records from the recipient of AAP funds. This is to ensure that the engine is being operated as stated in the project application. The recipient must maintain and update operating records throughout the project life and have them available to AQMD upon request. Annual records must contain, at a minimum, total actual hours of operations, or estimated amount of fuel used from actual fuel receipts, or kilowatt-hours of electricity used for electric motors. Actual hours of operations are acceptable for an engine equipped with a non-reset hour meter.

Monitoring may be required to comply with AQMD requirements and to ensure the program incentives are being applied toward the project as specified in the application. To ease the tracking of the equipment over the life of the project, an AQMD registration certificate may be issued to the equipment owner.

Reporting requirements are explained in the Deliverables section of PA #2007-08

## **POTENTIAL PROJECTS**

AAP-eligible projects include the repower or retrofit of stationary agricultural engines required to comply with Rule 1110.2 or portable agricultural engines required to comply with the CARB Portable Diesel ATCM.

### **A. Stationary Engine Repowers**

#### **Repower with Electric Motors**

Replacement of stationary engines in agricultural operations with electric motors provides significant emission benefits. Both diesel and SI engines may be repowered with electric motors. In addition to the cost for the purchase and installation of electric motor itself, selected costs for necessary peripheral equipment associated with the motor (e.g., control panel, motor leads, service pole with guy wire, connecting electric line) may be included in determining the grant amount awarded.

In June 2005, the Public Utilities Commission approved a reduced electricity rate and line extension allowance for Southern California Edison (SCE) to be used for conversion of stationary agricultural engines (excluding natural gas engines) to electric motors. Individuals enrolling in the SCE incentive program may still receive funds through the AAP for the additional costs of an electric motor replacement of an agricultural engine. Customers must enroll in this SCE incentive program before August 1, 2007.

#### **Repower with SI Engines Meeting Rule 1110.2**

AAP funds may be used to fund the purchase and installation costs to repower an existing stationary agricultural engine with a SI engine that complies with Rule 1110.2. After January 1, 2008, projects will not qualify unless the new SI engine is also certified by CARB to meet off-road emission standards.

Rule 1110.2 requires that the new SI engine meet more stringent emission limits that are equivalent to Best Available Control Technology (BACT).

### **B. Portable Engine Repowers**

Portable engines subject to the CARB Portable Diesel ATCM may be repowered with new diesel or SI portable engines. See Appendix 5 for the criteria for diesel repowers and Appendix 6 for SI repowers. Agricultural engines are not subject to the requirement in those appendices that the emission reduction must not be required by a regulation.

## **C. Stationary Engine Retrofits**

A retrofit involves modifications to the engine and/or fuel system, or addition of exhaust emission control equipment such that the retrofitted engine emissions are reduced to comply with Rule 1110.2. CARB CMP and AAP guidelines require that any retrofit kit be verified by CARB. Currently, there are no retrofit kits verified by CARB that comply with Rule 1110.2. If CARB verifies a retrofit kit that also will comply with Rule 1110.2, then it will be eligible for AAP funding.

## **D. Portable Engine Retrofits**

A retrofit involves modifications to the engine and/or fuel system, or addition of exhaust emission control equipment such that the retrofitted engine emissions are reduced to comply with the CARB Portable Diesel ATCM. See Appendix 5 for the criteria for diesel retrofits. Agricultural engines are not subject to the requirement in Appendix 5 that the emission reduction must not be required by a regulation.

## **PROJECT CRITERIA**

The project criteria below are the minimum eligibility requirements for AAP funding for stationary agricultural engine projects. The criteria focus on emission reductions, cost-effectiveness of total reductions, and the ability for a project to be completed within the timeframe of the program.

### **A. General**

- The AAP may be used to fund agricultural engine projects for a minimum of three years from the adoption of an applicable rule or until the applicable rule compliance date, whichever is later. Emission reductions are not required to be surplus.
- Projects must meet a maximum cost-effectiveness of \$14,300 per weighted ton of NOx + ROG + combustion PM10 reduced, calculated in accordance with the cost-effectiveness methodology discussed in this Appendix.
- No project funded by the AAP shall be used for credit under any AQMD, federal or state emission averaging banking and trading program.
- Projects must have a minimum project life of three years. CARB may approve shorter project life on a case-by-case basis. The default project life for stationary engines is ten years for electric motors and seven years for engines without documentation. A longer project life may be used with approval by CARB staff, however, sufficient documentation must be provided to CARB that supports the selected project life based on the actual remaining useful life.
- The contract term must extend to the end of the project life.
- Potential projects that fall outside of these criteria may be considered on a case-by-case basis if evidence provided to AQMD suggests potential, real, quantifiable, and enforceable emission reduction benefits. AQMD must consult with CARB staff to determine eligibility of all projects considered for funding on a case-by-case basis.

All projects considered on a case-by-case basis must receive CARB approval prior to receiving program funding.

- An engine must be rated at greater than 50 hp<sup>3</sup>.
- Stationary engines must operate only in AQMD<sup>4</sup>. Portable engines must operate at least 75% of the time in AQMD.
- Third party applications are not allowed. The equipment owner must sign and agree to the application. However, a third party (e.g. engine dealer or distributor) may prepare an application or part of an application on an owner's behalf. In this case, the third party must also sign the application and list how much they are being paid, if anything, to complete the application and what source of funds are being used to pay them. AQMD will provide technical assistance to applicants in completing the application.
- Agricultural engine operators must separately apply to AQMD for a permit to construct any new engine, engine repower, or engine retrofit, and obtain the permit before starting the installation.

## **B. Stationary Engine Repowers**

- A repower of a stationary agricultural engine must be with one of the following:
  - A new electric motor.
  - A new SI engine that is subject to and complies with AQMD permitting requirements, as well as the emission, monitoring, source testing, record keeping and reporting requirements of Rule 1110.2. After January 1, 2008, projects will not qualify unless the new SI engine is also certified by CARB to meet off-road emission standards. Since there are no CARB-certified SI engines that comply with AQMD Rule 1110.2, and there is no guarantee there will be any by January 1, 2008, potential applicants are recommended to apply for funding well before January 1, 2008.
- Any new stationary SI engine must meet the more stringent emission limits of subparagraph (d)(1)(A) of Rule 1110.2, which are equivalent to Best Available Control Technology.
- A repower of an emissions-controlled SI engine must provide a NOx emission reduction of at least 15% from the baseline engine NOx emissions.
- Electric motor projects require documentation of payment to the local utility company for power installation and must have a functioning kilowatt-hour meter, or other method approved by AQMD to monitor usage.
- The use of a non-certified SI engine requires approval by CARB staff.

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<sup>3</sup> Engines rated greater than 25 hp and less than or equal to 50 hp may qualify for CMP funding. See other relevant appendices.

<sup>4</sup> See the map of the AQMD jurisdiction at <http://www.aqmd.gov/map/MapAQMD1.pdf>



- SI engines shall be required to have closed-loop air-to-fuel ratio control systems, and three-way catalysts for emissions control.
- SI engines shall be subject to source testing with testing procedures that are required by Rule 1110.2 and CARB-approved.
- SI engines shall be subject to NO<sub>x</sub>, carbon monoxide and hydrocarbon emission readings using a portable analyzer following AQMD monitoring requirements.
- The costs associated with source testing and monitoring requirements for SI engines are not eligible for funding.

### **C. Stationary Engine Retrofits**

- A retrofit of a SI engine must be with a retrofit kit that complies with Rule 1110.2 and is CARB-verified to reduce NO<sub>x</sub>+NMHC emissions to the currently applicable standard for off-road large spark-ignited equipment. Currently there are no CARB-verified retrofits that will meet these requirements, but engines can instead be repowered with new electric motors or SI engines.
- Reduced-emission retrofit kits must be CARB-verified following California test procedures and must comply with durability and warranty requirements.

### **D. Destruction of Repowered Engines**

The existing (old) engine must be destroyed and rendered useless. Engines must have a complete and fully visible and legible engine serial number in order to be eligible for an engine repower. The destruction of the engine must be documented during the post-inspection by AQMD staff seeing the destroyed engine or the receipt from a qualified vehicle salvage yard (see 2005 Carl Moyer Program Guidelines, Part II, Chapter 2: Fleet Modernization, Salvage Requirements for definition). Engines without a visible and legible serial number may be repowered if AQMD staff stamp the engine block with the AAP project number and AQMD staff is present to personally verify engine removal from the project equipment and the subsequent engine destruction. ARB staff will consider alternatives to stamping the engine block on a district-by-district basis.

### **COST-EFFECTIVENESS OF TOTAL EMISSIONS REDUCTIONS**

Projects funded through the AAP are not required to achieve surplus emission reductions. In order to ensure that the technologies and costs of projects funded by the AAP are generally comparable to those funded by the CMP, AAP projects must meet a “cost-effectiveness of total emissions reductions” criterion. The total emissions reductions are determined by subtracting the emissions of the new project from the emissions of the old engine. AQMD staff will calculate cost-effectiveness using the procedures described in the CARB 2005 CMP Guidelines, Part III – Agricultural Assistance Program and other relevant parts. It is not necessary for AAP applicants to do this calculation.